

Small Signal Zener Diodes

Features

- Silicon Planar Power Zener Diodes
- Standard Zener voltage tolerance is $\pm 5\%$
- These diodes are also available in Mini-MELF case with the type designation TZM5221 ... TZM5267, SOT23 case with the type designations MMBZ5225 ... MMBZ5267 and SOD123 case with the types designations MMSZ5225 ... MMSZ5267
- Lead (Pb)-free component
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



94 9367

Applications

- Voltage stabilization

Mechanical Data

Case: DO35 Glass case

Weight: approx. 125 mg

Cathode Band Color: black

Packaging codes/options:

TAP/10 k per Ammopack (52 mm tape), 30 k/box

TR/10 k per 13" reel, 30 k/box

Absolute Maximum Ratings

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Power dissipation	$T_L \leq 25\text{ }^{\circ}\text{C}$	P_{tot}	500	mW
Z-current		I_Z	P_{tot}/V_Z	mA

Thermal Characteristics

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air	$l = 4\text{ mm}$, $T_L = \text{constant}$	R_{thJA}	300	K/W
Junction temperature		T_j	175	$^{\circ}\text{C}$
Storage temperature range		T_{stg}	- 65 to + 175	$^{\circ}\text{C}$

Electrical Characteristics

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	$I_F = 200\text{ mA}$	V_F			1.1	V

1N5221B to 1N5267B



Vishay Semiconductors

Electrical Characteristics

1N5221B...1N5267B

Partnumber	Nominal Zener Voltage ¹⁾	Test Current	Maximum Dynamic Impedance ¹⁾	Maximum Dynamic Impedance	Typical Temperature of Coefficient	Maximum Reverse Leakage Current	
						I_R	V_R
						at I_{ZT} , V_Z	I_{ZT}
	V	mA	Ω	Ω	α (%/K)		
1N5221B	2.4	20	30	1200	-0.085	100	1
1N5222B	2.5	20	30	1250	-0.085	100	1
1N5223B	2.7	20	30	1300	-0.080	75	1
1N5224B	2.8	20	30	1400	-0.080	75	1
1N5225B	3	20	29	1600	-0.075	50	1
1N5226B	3.3	20	28	1600	-0.070	25	1
1N5227B	3.6	20	24	1700	-0.065	15	1
1N5228B	3.9	20	23	1900	-0.060	10	1
1N5229B	4.3	20	22	2000	+0.055	5	1
1N5230B	4.7	20	19	1900	+0.030	5	2
1N5231B	5.1	20	17	1600	+0.030	5	2
1N5232B	5.6	20	11	1600	+0.038	5	3
1N5233B	6	20	7	1600	+0.038	5	3.5
1N5234B	6.2	20	7	1000	+0.045	5	4
1N5235B	6.8	20	5	750	+0.050	3	5
1N5236B	7.5	20	6	500	+0.058	3	6
1N5237B	8.2	20	8	500	+0.062	3	6.5
1N5238B	8.7	20	8	600	+0.065	3	6.5
1N5239B	9.1	20	10	600	+0.068	3	7
1N5240B	10	20	17	600	+0.075	3	8
1N5241B	11	20	22	600	+0.076	2	8.4
1N5242B	12	20	30	600	+0.077	1	9.1
1N5243B	13	9.5	13	600	+0.079	0.5	9.9
1N5244B	14	9	15	600	+0.082	0.1	10
1N5245B	15	8.5	16	600	+0.082	0.1	11
1N5246B	16	7.8	17	600	+0.083	0.1	12
1N5247B	17	7.4	19	600	+0.084	0.1	13
1N5248B	18	7	21	600	+0.085	0.1	14
1N5249B	19	6.6	23	600	+0.086	0.1	14
1N5250B	20	6.2	25	600	+0.086	0.1	15
1N5251B	22	5.6	29	600	+0.087	0.1	17
1N5252B	24	5.2	33	600	+0.088	0.1	18
1N5253B	25	5	35	600	+0.089	0.1	19
1N5254B	27	4.6	41	600	+0.090	0.1	21
1N5255B	28	4.5	44	600	+0.091	0.1	21
1N5256B	30	4.2	49	600	+0.091	0.1	23
1N5257B	33	3.8	58	700	+0.092	0.1	25
1N5258B	36	3.4	70	700	+0.093	0.1	27
1N5259B	39	3.2	80	800	+0.094	0.1	30
1N5260B	43	3	93	900	+0.095	0.1	33
1N5261B	47	2.7	105	1000	+0.095	0.1	36
1N5262B	51	2.5	125	1100	+0.096	0.1	39
1N5263B	56	2.2	150	1300	+0.096	0.1	43
1N5264B	60	2.1	170	1400	+0.097	0.1	46

Partnumber	Nominal Zener Voltage ¹⁾	Test Current	Maximum Dynamic Impedance ¹⁾	Maximum Dynamic Impedance	Typical Temperature of Coefficient	Maximum Reverse Leakage Current	
	at I_{ZT} , V_Z	I_{ZT}	Z_{ZT} at I_{ZT}	Z_{ZK} at $I_{ZK} = 0.25$ mA	at I_{ZT}	I_R	V_R
	V	mA	Ω	Ω	α (%/K)	μ A	V
1N5265B	62	2	185	1400	+ 0.097	0.1	47
1N5266B	68	1.8	230	1600	+ 0.097	0.1	52
1N5267B	75	1.7	270	1700	+ 0.098	0.1	56

¹⁾ Based on dc-measurement at thermal equilibrium; lead length = 9.5 (3/8 "); thermal resistance of heat sink = 30 K/W

Typical Characteristics

$T_{amb} = 25$ °C, unless otherwise specified

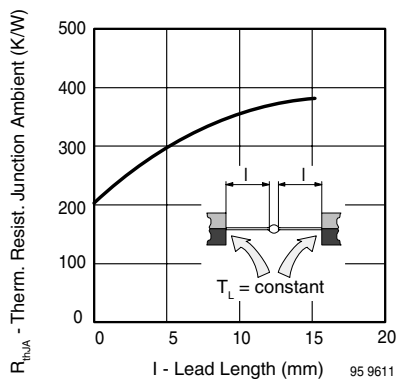


Figure 1. Thermal Resistance vs. Lead Length

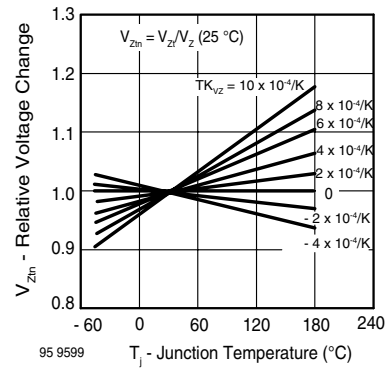


Figure 3. Typical Change of Working Voltage vs. Junction Temperature

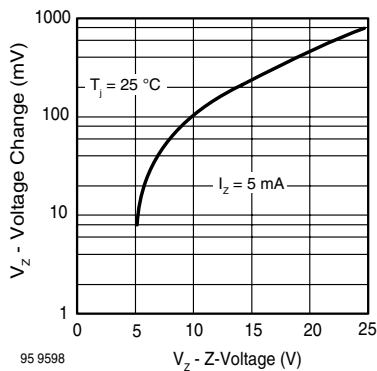


Figure 2. Typical Change of Working Voltage under Operating Conditions at $T_{amb} = 25$ °C

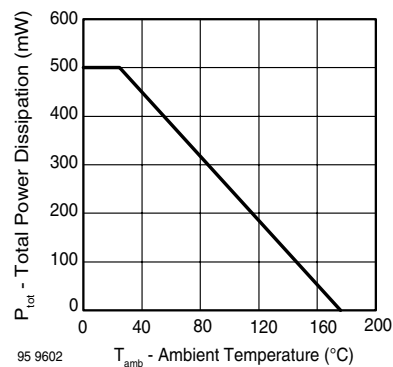


Figure 4. Total Power Dissipation vs. Ambient Temperature

1N5221B to 1N5267B

Vishay Semiconductors

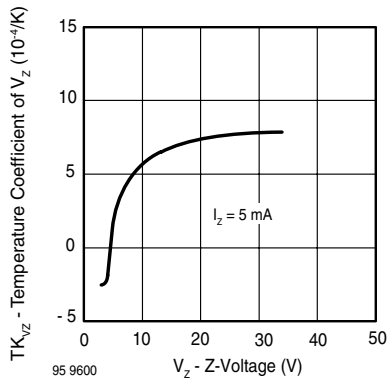


Figure 5. Temperature Coefficient of Vz vs. Z-Voltage

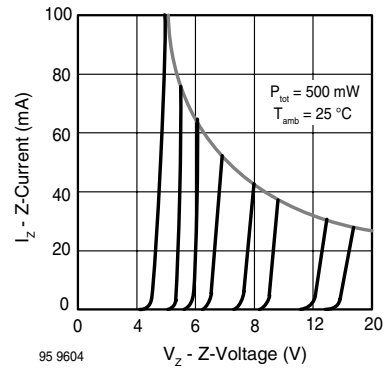


Figure 8. Z-Current vs. Z-Voltage

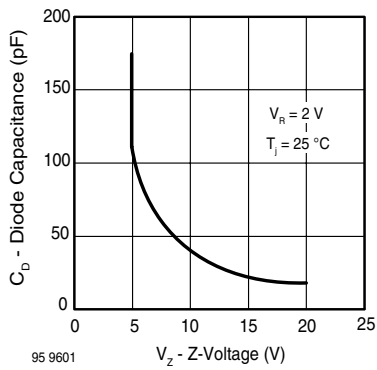


Figure 6. Diode Capacitance vs. Z-Voltage

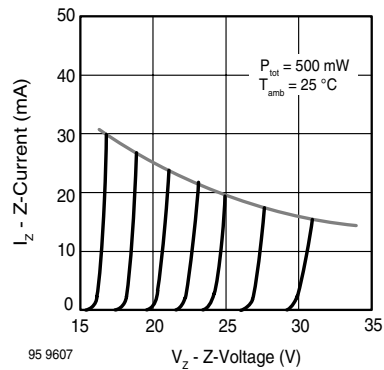


Figure 9. Z-Current vs. Z-Voltage

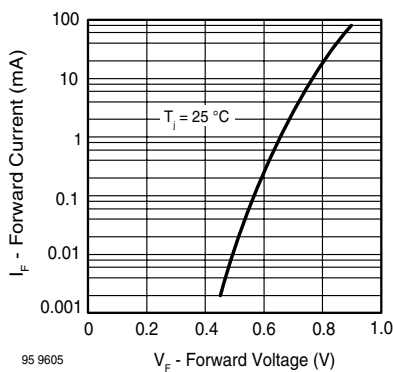


Figure 7. Forward Current vs. Forward Voltage

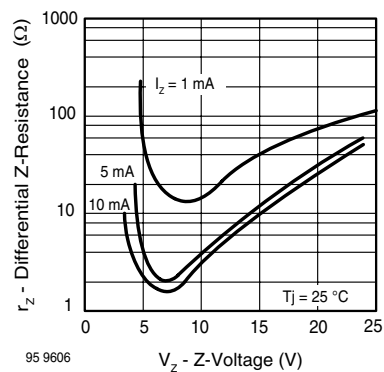


Figure 10. Differential Z-Resistance vs. Z-Voltage

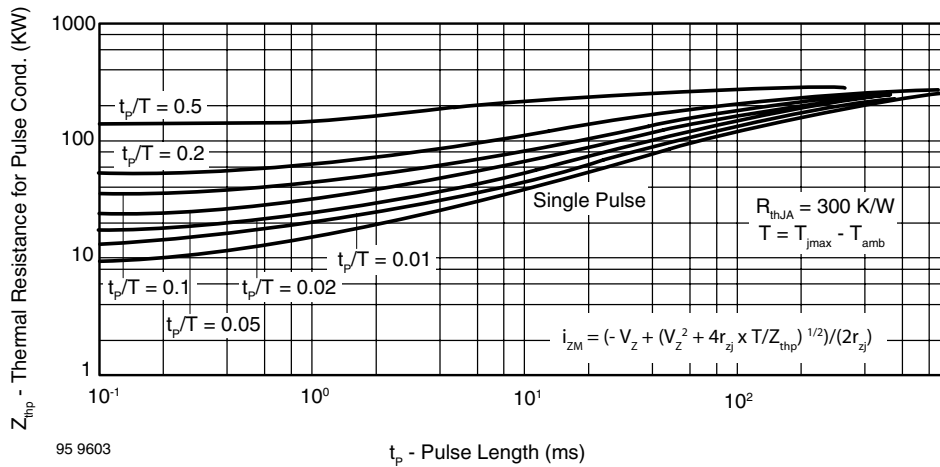
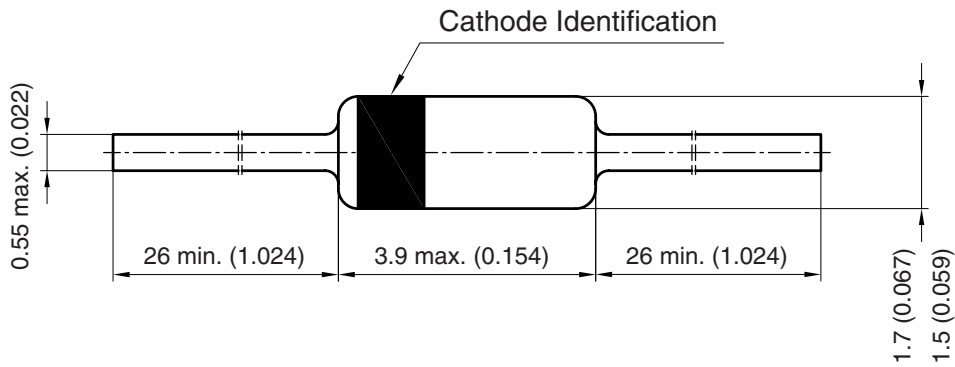


Figure 11. Thermal Response

Package Dimensions in millimeters (inches): DO35



Rev. 6 - Date: 29. January 2007
 Document no.: 6.560-5004.02-4
 94 9366

Ozone Depleting Substances Policy Statement

It is the policy of Vishay Semiconductor GmbH to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

We reserve the right to make changes to improve technical design
and may do so without further notice.

Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use Vishay Semiconductors products for any unintended or unauthorized application, the buyer shall indemnify Vishay Semiconductors against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany



Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.